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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,256	07/11/2003	Byung-in Ma	1293.1863	2425

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EXAMINER	
GOMA, TAWFIK A	

ART UNIT	PAPER NUMBER
2653	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,256	MA ET AL.	
	Examiner	Art Unit	
	Tawfik Goma	2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12 and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ma et al (EP Publication 1085509 A2).

Regarding claim 1, Ma discloses a method of detecting a radial tilt of a disc (col. 9 lines 51-57), the method comprising: comparing phases of first summed signals obtained from a first plurality of signals that external light-receiving units of a photo diode receive to generate an external phase comparison signal (figs. 13-15 and col. 16 lines 7-10); comparing phases of second summed signals obtained from a second plurality of signals that internal light-receiving units of the photo diode receive to generate an internal phase comparison signal (figs. 8-10 and col. 15 lines 17-23); and detecting the radial tilt based on the internal and external phase comparison signals obtained when a laser beam crosses a track on the disc (col. 16 lines 44-54).

Regarding claim 2, Ma discloses wherein the detecting of the radial tilt comprises reading a level value of the internal phase comparison signal when a level value of the external phase comparison signal is substantially zero (col. 11 lines. 29-34 and figs. 10

and 15). Ma discloses that each light portion of the photo-detector detects a signal separately and that a phase comparison on the inner areas is performed as well as a phase comparison on the outer areas. As a result, the phase comparison of the outer areas, which determines a radial tilt error signal, does not affect the detection performed on the inner areas, which also performs a radial tilt error signal, in the case where the phase comparison of the outer areas is zero.

Regarding claim 3, Ma discloses wherein the detecting of the radial tilt comprises multiplying the read value by a proportional constant (155, fig. 19).

Regarding claim 4, Ma discloses wherein the internal and external light-receiving units are substantially rectangular(A2, B2, C2, D2, fig. 5), two sides of light-receiving surfaces of the internal light-receiving units and two sides of light-receiving surfaces of the external light-receiving units disposed in a track direction of the disc are substantially identical, and the other two sides of the light-receiving surfaces of the external light-receiving units disposed to be substantially perpendicular to the track direction of the disc are longer than the other two sides of the light-receiving surfaces of the internal light-receiving units disposed to be substantially perpendicular to the track direction of the disc (fig. 5).

Regarding claim 5, Ma discloses wherein the second plurality of signals that internal light-receiving units receive to generate the internal phase comparison signal are portions of -1^{st} order and 1^{st} order beams of light (col. 10 lines 40-45).

Regarding claim 6, Ma discloses wherein the first plurality of signals the external

light-receiving units receive to generate the external phase comparison signal are a 0^{th} order beam of light and one of -1^{st} order and 1^{st} order beams of light (col. 10 lines 54-58).

Regarding claim 7, Ma discloses an apparatus detecting a radial tilt of a disc, the apparatus comprising: a pickup unit in which an octant photo diode is mounted (fig. 1 and fig. 5); a phase comparator comparing phases of first summed signals obtained from a first plurality of signals that external light-receiving units of the octant photo diode receive and generating an external phase comparison signal (159, fig. 15), and comparing phases of second summed signals obtained from a second plurality of signals that internal light-receiving units of the octant photo diode receive and generating an internal phase comparison signal (159, fig. 11); and a tilt detector detecting the radial tilt when a laser beam crosses a track on a disc (col. 9 lines 51-57), based on the internal and external phase comparison signals generated by the phase comparator (col. 16 lines 32-53).

Regarding claim 8, Ma discloses wherein the tilt detector reads a level value Rs of the internal phase comparison signal (S2, fig. 17) when a level value of the external phase comparison signal is substantially zero (col. 11 lines. 29-34 and fig. 17). Ma discloses that each light portion of the photo-detector detects a signal separately and that a phase comparison on the inner areas is performed as well as a phase comparison on the outer areas. As a result, the phase comparison of the outer areas, which determines a radial tilt error signal, does not affect the detection performed on

the inner areas, which also performs a radial tilt error signal, in the case where the phase comparison of the outer areas is zero.

Regarding claim 9, Ma discloses wherein the tilt detector multiplies the read value Rs by a proportional constant calculating a radial tilt value (451, fig. 17).

Regarding claim 10, claim 10 is rejected for the same reasons as claim 4 above.

Regarding claim 11, claim 11 is rejected for the same reasons as claim 5 above.

Regarding claim 12, claim 12 is rejected for the same reasons as claim 6 above.

Regarding claim 15, claim 15 is rejected for the same reasons as claim 1 above.

Regarding claim 16, claim 16 is rejected for the same reasons as claim 1 above.

Regarding claim 17, Ma discloses a computer readable medium encoded with processing instructions implementing a method of detecting a radial tilt of a disc (col. 33 lines 37-45) , the method comprising: comparing phases of first summed signals obtained from a first plurality of signals that external light-receiving units of a photo diode receive to generate an external phase comparison signal (S1, fig. 17); comparing phases of second summed signals obtained from a second plurality of signals that internal light-receiving units of the photo diode receive to generate an internal phase comparison signal (S2, fig. 17); and detecting the radial tilt based on the internal and external phase comparison signals obtained when a laser beam crosses a track on the disc (col. 16 lines 32-53).

Regarding claim 18, claim 18 is rejected for the same reasons as claim 2 above.

Regarding claim 19, Ma discloses wherein the method of detecting the radial tilt comprises multiplying the read value by a proportional constant (451, fig. 17).

Claim Rejections - 35 USC § 103

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al (EP 1085509) in view of Sano et al (US Patent Pub. 2002/0041542).

Regarding claims 13 and 14, Ma discloses a disc drive apparatus to drive and control tilt of a disc, comprising: a drive unit to rotate the disc (col. 1 lines 11-14); a pickup unit in which an octant photo diode is mounted (fig. 5); a tilt detector unit. Ma discloses the tilt detector unit as shown in the rejection of claim 1 above. Ma fails to disclose a focusing and seek servo control system to move a laser beam spot to a target track on the disc; a rotating servo control system to control the rotation of the disc; and a tracking servo control system to move the laser beam spot to follow the target track during the rotation of the disc. Ma discloses that the tilt detection unit disclosed is used an optical recording/reproducing apparatus, but fails to describe the features of the apparatus as claimed. However, in the same field of endeavor, Sano discloses an optical recording/reproducing apparatus with tilt correction that includes a focus control and tracking control system (204, fig. 1) and a rotating control servo (605, 601, fig. 12). It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Sano by providing a tilt detection device as disclosed by Ma. The rationale is as follows: One of ordinary skill in the art would incorporate the tilt detector taught by Ma in an apparatus with focus, tracking, and disc rotation control in order to perform recording/reproducing functions. Further in regard to claim 14, Ma discloses a disc recording/reproducing apparatus, comprising: at least one of a recording part to record data on a disc and a reproducing part to reproduce data that had been recorded

on a disc (col. 6 lines 19-22). It is inherent that the apparatus is mounted in a fixture in order to be functional as a recording/reproducing apparatus. It is also inherent that there is a path that transmits the signal to the recording/reproducing part.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tawfik Goma
1/5/2006

Thang V. Tran
Primary Examiner
1/5/2006